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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT Application of
Lindqvist, et. al.

Group Art Unit: Unknown

U.S. Serial No. 10/009,302

Examiner: Unknown

Filed: December 7, 2001

Att. Docket No.: 627-1446

For: METHOD AND DEVICE FOR BATTERIES

* * * * *

**SUPPLEMENTAL AFFIDAVIT SHOWING DILIGENT EFFORT TO OBTAIN
SIGNATURES OF INVENTORS UNDER 37 C.F.R. § 1.47**

Hon. Asst. Commissioner of Patents
and Trademarks
Washington, D.C. 20231

Sir:

I, Lars Åke Holger Johansson, born in Arvika, Sweden the 16th of March 1943 and now living in Lövnäs, 67196 Mangskog, Sweden declare and state as follows.

I was the president of Holgia AB, Box 189, 67124 Arvika, Sweden, which changed its name to Macbat AB, Box 189, 67124, on October 25, 2001. [See enclosure 1 filed on August 13, 2002]. Accordingly, I have always been a signing officer for both Holgia AB and Macbat AB.

In 1997 I entered into the business field related to charging of batteries, by the purchase of a new and patented method.

In 1998 I contacted with the president of Fyrtech AB, Mr. Henrik Lindqvist, to discuss assistance concerning development and production of our battery charging system.

On April 13, 1999, Holgia AB made an agreement with Fyrtech AB, which gave Fyrtech AB exclusive rights to produce and conduct the development work of the new system, whereas Holgia AB was given exclusive rights to all Intellectual Property of the development work. As a consequence of the development work, a patent application (SE 9902286-5) was filed in the Swedish Patent Office on June 15, 1999, with Mr. Frank Lindqvist (a son of Mr. Henrik Lindqvist) and Mr. Henrik Lindqvist as the named inventors. Holgia AB was the owner under the contract and, accordingly, Mr. Frank Lindqvist and Mr. Henrik Lindqvist signed an assignment on

August 26, 1999 naming Holgia AB as the assignee, which was filed in the Swedish Patent Office. [See enclosure 2 filed on August 13, 2002] SE 9902286-5 is the priority document for the present application Serial No. 10/009,3002.

On May 24, 2000, a PCT application (PCT/SE00/01049, See enclosure 3) was filed claiming priority from SE 9902286-5, which designated the U.S. In connection with filing of this PCT application the inventors, Mr. Frank Lindqvist and Mr. Henrik Lindqvist, did not hesitate to sign required documents. [See enclosure 3 filed on August 13, 2002]

In December 20, 1999, liquidation of Fyrtech AB was decided. [See enclosure 5] On March 7, 2000 Holgia AB purchased all rights to all of the assets related to battery charging that was in possession of Fyrtech AB in liquidation. [See enclosure 6 filed on August 13, 2002]

As a consequence of the liquidation of Fyrtech AB, Mr. Henrik Lindqvist was without work and income. It was therefore agreed that Mr. Henrik Lindqvist should be paid some of the future expected royalty income in advance and that he and his son in return would assist in further development of our battery system.

In June 2001, Mr. Frank Lindqvist and Mr. Henrik Lindqvist had received more than one million SEK (1.000.000 SEK) in payments from Holgia AB. However, no useful further development work was actually presented, e.g. no new subject-matter was identified that could serve as the basis for a new patent application. Moreover the business development of Macbat AB did not progress as expected, which caused financial difficulties. As a consequence, Holgia AB (now Macbat AB) informed Mr. Frank Lindqvist and Mr. Henrik Lindqvist that it was not interested in and could not afford further development work from them. In conjunction therewith, a generous royalty agreement was presented, which the inventors did not agree to. Despite, these generous efforts, Mr. Frank Lindqvist and Mr. Henrik Lindqvist have refused signing any further documents related to PCT/SE00/01049 unless a payment of more than 1,5 million SEK (1.500.000 SEK) was made. However, Holgia AB/Macbat AB was not in a financial situation that could allow any advance payments of future royalties, due to the early stage of the commercial development of the new battery charging system.

In November 2001 it was decided that PCT/SE00/01049 should be filed as a national phase PCT application in the U.S. (as well as many other countries). The U.S. national phase PCT application was filed as the present Serial No. 10/009,302 on

December 7, 2001, without an oath. On April 18, 2002, the oath, power of attorney and assignment document was sent via registered mail to Frank Lindqvist for the inventors signature by our patent agency Hynell Patenttjänst AB. [See enclosure 7 filed on August 13, 2002] However, these documents were never signed and returned by the inventors Frank Lindqvist and Henrik Lindqvist. On July 12, 2002 a second copy of the documents including the oath was sent by registered mail to both inventors Frank Lindqvist and Henrik Lindqvist to be signed by them. [See enclosure 8 filed on August 13, 2002] These documents have also not been returned.

In response to the request for further Proof of Unavailability or Refusal in the Decision on Petition Under 37 CFR 1.47(b) dated December 19, 2002, on January 22, 2003 I forwarded a complete copy of the application (including the specification, claims and drawings), the oath, power of attorney and assignment document via registered mail to Frank Lindqvist for signature by both inventors. [See enclosure 9] Both inventors, Frank Lindqvist and Henrik Lindqvist, sent letters to me dated February 12, 2003, in which they stated they would not sign the oath, power of attorney and assignment document. [See enclosure 10] On February 21, 2003, I again forwarded a complete copy of the application (including the specification, claims and drawings), the oath, power of attorney and assignment document via registered mail in separate letters to Frank Lindqvist and to Henrik Lindqvist for signature. [See enclosure 11]. I have not received any response to my latest request for the inventors signatures on the oath, power of attorney and assignment documents.

It appears that the inventors are using the situation in U.S. and in some other patent offices, e.g. Norway and South Africa, to obtain unjustified payments. We have put a lot of effort into negotiations to find a settlement, but without success.

We therefore see no other possible alternative at this stage than to petition the U.S. Patent and Trademark Office to allow us to take over the prosecution of the present patent application, which we rightfully own by contract and by assignment of the priority document as set forth above.

I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.



.....Place Århus, Sweden Date 4-03.....

Lars Åke Holger Johansson
President of Macbat AB

3009331

PRV Bolag
PATENT- OCH REGISTRERINGSVERKET

Page 1

CERTIFICATE OF REGISTRATION

SWEDEN

Registration number: 556095-1138
Date of registration: 1964-11-17
Company name: Macbat AB
Address: Box 189
671 24 ARVIKA 1
Registered office: Arvika
Share capital: SEK 100.000



BOARD OF DIRECTORS:

350430-5552 Arrestad, Bengt Åke, (O), Älvgatan 11,
652 25 KARLSTAD
560304-7878 Berglund, Hans Olof Lennart, Majorskans väg 13,
653 46 KARLSTAD
390504-4412 Hammar, Lars Fredrik, Sjöbacksvägen 14,
663 41 HAMMARÖ
430316-6419 Johansson, Lars Åke Holger, Lövnäs, 671 96 MANGSKOG

MANAGING DIRECTOR:

430316-6419 Johansson, Lars Åke Holger, Lövnäs, 671 96 MANGSKOG

COMPANY AUDITORS:

350527-5432 Hultgren, Lars Verner, Kungsgatan 14, 652 24 KARLSTAD

SIGNATORY POWER:

In addition to the Board of Directors,
Johansson, Lars Åke Holger
alone,
is entitled to sign on behalf of the company.

FINANCIAL YEAR:

Registered financial year: 0101-1231
Latest annual report submitted covers financial
period 000101-001231

DATE OF REGISTRATION OF CURRENT AND PREVIOUS COMPANY NAMES:

2001-10-25 Macbat AB
1998-11-02 Holgia AB
1996-03-25 Fjord i Arvika AB
1984-08-24 Janus i Arvika Aktiebolag
1964-11-17 Aktiebolaget Tolars Konstruktionsbyrå

CONTD.

3009331

Page 2

PRV Bolag

PATENT- OCH REGISTRERINGSVERKET

CERTIFICATE OF REGISTRATION

SWEDEN

Registration number: 556095-1138

Date of registration: 1964-11-17

Company name: Macbat AB

Address:

Box 189
671 24 ARVIKA 1

Registered office: Arvika

Share capital: SEK 100.000

SUNDSVALL 2001-11-01
Ex officio

Gunn Lahti
GUNN LAHTI



- (O) = chairman of the board
- (A) = employee representative
- (U) = person resident outside EEA
- (E) = person resident outside Sweden but within EEA

Translation of "Överlåtelse"

Patents

Sweden

ASSIGNMENT

in favour of HOLGIA AB
 Box 189
 671 24 ARVIKA

It is herewith declared, that we have assigned our entire right to the above assignee, namely

- I) to apply for and to obtain a patent in Sweden
for an invention relating to

"Method and device for batteries", for which invention a Swedish patent application No.
9902286-5 was filed 15 June 1999

made by us, and

to possible damages due to infringements made in the above mentioned right before
registration of this assignment in the Swedish Patent Office.

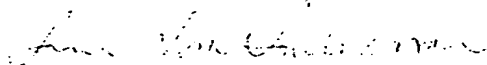
Place and date: Åmål August 26, 1999

Signatures: Frank Lindqvist

Henrik Lindqvist

I, the undersigned, Anna-Lisa Andersson of Uddeholm, Sweden,
who is well acquainted with both the Swedish and English languages,
do hereby certify that the translation of "Överlåtelse" (Assignment in English)
is complete and accurate.

Uddeholm, July 25, 2002-07-25


.....
Anna-Lisa Andersson

HYNELL

PATENTTJÄNST AB

PATENT, TRADE MARK & DESIGN REGISTRATION SERVICES
EUROPEAN PATENT & TRADE MARK ATTORNEYS

Patent

Sverige

1746-101

ÖVERLÅTELSE

till förmån för övertagaren: **HOLGIA AB**
Box 189
671 24 ARVIKA

Härmed förklaras, att vi på ovannämnda övertagare överlåtit hela vår rätt enligt följande

1) att söka och erhålla patent i Sverige

på en uppfinning avseende

"Metod och anordning för batterier", vilken uppfinning är föremål för svensk patentansökan nr 9902286-5, inlämnad 15 juni 1999.

gjord av OSS

till eventuellt skadestånd för intrång begånget i ovannämnda skydds rätt(er) före anteckning av denna överlåtelse hos Patentverket

Ort och datum Arvika den 26.8.99

Underskrift(er) Frank Lindqvist

Frank Lindqvist
Mühlstrasse 64
DE-64319 PFUNGSTADT
Tyskland

Henrik Lindqvist
Sentastrasse 15
DE-68199 MANNHEIM
Tyskland

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
21 December 2000 (21.12.2000)

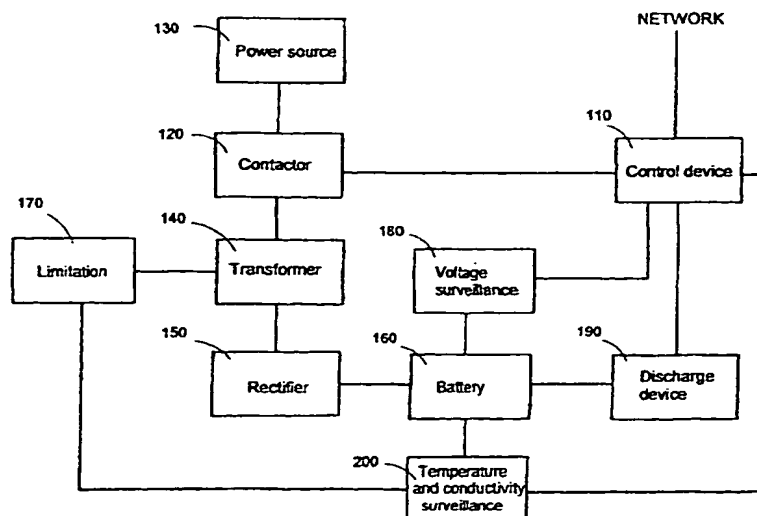
PCT

(10) International Publication Number
WO 00/77911 A1

- (51) International Patent Classification⁷: **H02J 7/00**, **H01M 10/44**
- (21) International Application Number: **PCT/SE00/01049**
- (22) International Filing Date: **24 May 2000 (24.05.2000)**
- (25) Filing Language: **Swedish**
- (26) Publication Language: **English**
- (30) Priority Data:
9902286-5 **15 June 1999 (15.06.1999)** **SE**
- (71) Applicant (for all designated States except US): **HOLGIA AKTIEBOLAG [SE/SE]; Box 189, S-671 24 Arvika (SE).**
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **LINDQVIST, Frank [FI/DE]; Jargeuringen 30, D-68799 Reilingen (DE). LINDQVIST, Henrik [DE/SE]; Bergängsvägen 9, S-662 36 Åmål (SE).**
- (74) Agents: **HYNELLE, Magnus et al.; Hynell Patenttjänst AB, Patron Carls Väg 2, S-683 40 Hagfors/Uddeholm (SE).**
- (81) Designated States (national): **AE, AG, AL, AM, AT, AT (utility model), AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, CZ (utility model), DE, DE (utility model), DK, DK (utility model), DM, DZ, EE, EE (utility model), ES, FI, FI (utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KR (utility model), KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (utility model), SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.**
- (84) Designated States (regional): **ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).**
- Published:
— With international search report.
— Before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments.

[Continued on next page]

(54) Title: **METHOD AND DEVICE FOR BATTERIES**



(57) Abstract: Method for treatment, in the form of regeneration, of accumulators having at least one cell, preferably lead batteries, in which a varying direct voltage from a charging unit is applied in intermittent current supply periods, which are interrupted by current free pauses, the direct voltage being sufficient to generate gas in the accumulator. During the treatment process, process data is registered, for at least one cell in the accumulator, which process data is used in order to control the treatment process.

PCT

POWER OF ATTORNEY

(for an international application filed under the Patent Cooperation Treaty)

(PCT Rule 90.4)

The undersigned applicant(s) (Names should be indicated as they appear in the request):

HOLGIA AKTIEBOLAG
Box 189
S-671 24 ARVIKA
Sweden

LINDQVIST, Frank
Jargeuringen 30
D-68799 REILINGEN
Germany

LINDQVIST; Henrik
Bergsängsvägen 9
S-662 36 ÅMÅL
Sweden

hereby appoints (appoint) the following person as:

☒ agent

☐ common representative

Name and address

(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

Anyone of HYNELL Magnus, KYLIN Peter, WASSEN Helena, BJÖRKMAN Annika or
LUNDAHL Kjell
Hynell Patenttjänst AB
Patron Carls väg 2
SE-683 40 HAGFORS/UDDEHOLM
Sweden

to represent the undersigned before

☒ all the competent International Authorities

☐ the International Searching Authority only

☐ the International Preliminary Examining Authority only

In connection with the international application identified below:

Title of the invention: METHOD AND DEVICE FOR BATTERIES

Applicant's or agent's file reference: P1446-100A

International application number (if already available): PCT/SE00/01049

filed with the following Office Swedish Patent Office as receiving Office
and to make or receive payments on behalf of the undersigned.

Signature of the applicant(s) (where there are several applicants, each of them must sign; next to each signature, indicate the name of the person signing and the capacity in which the person signs, if such capacity is not obvious from reading the request or this power):

HOLGIA AKTIEBOLAG

Åke Johansson President

Frank Lindqvist

Date:

28/7 2000

Henrik Lindqvist

1773002

PRV Bolag
PATENT- OCH REGISTRERINGSVERKET

Page 1

CERTIFICATE OF REGISTRATION

SWEDEN

Registration number: 556268-6344
Date of registration: 1985-11-29
Company name: Fyrtech Microelectronics AB
Address: c/o Advokatfirman Vinge KB
Box 4255
203 13 MALMÖ
Registered office: Åmål
Share capital: SEK 15.620.906,25
Note: LIQUIDATION TERMINATED , 01-12-17.



LIQUIDATORS:

620510-3374 Gabrielson, Erik Henry, c/o Advokatfirman Vinge KB,
Box 4255, 211 43 MALMÖ
430621-6435 Noreberg, Yngve Bertil, Rosenvägen 11,
464 50 DALS ROSTOCK

COMPANY AUDITORS:

560112-5593 Gustafsson, Peter, Kastellgatan 15, 413 07 GÖTEBORC
560127-5554 Persson, Stefan Anders Tage, Box 477, 651 07 KARLSTAD

SIGNATORY POWER:

The liquidators are entitled to sign on behalf
of the company.

FINANCIAL YEAR:

Registered financial year: 0101-1231
Latest annual report submitted covers financial
period 000101-001231

DATE OF REGISTRATION OF CURRENT AND PREVIOUS COMPANY NAMES:

1996-07-05 Fyrtech Microelectronics AB
1993-11-24 Progreso Managementkonsult Aktiebolag
1991-06-19 Progreso, Averpil & Gustafson Partners
Aktiebolag
1990-12-04 Karlsborg Pappers Aktiebolag
1989-05-30 Basteskårs Livs Aktiebolag
1986-05-23 Holger Gunnarsson Livs Aktiebolag
1985-11-29 Aktiebolaget Grundstenen 27174

CONTD.

1773002

PRV Bolag

PATENT- OCH REGISTRERINGSVERKET

Page 2

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Box 4255
203 13 MALMÖ
Registered office: Åmål
Share capital: SEK 15.620.906,25
Note: LIQUIDATION TERMINATED , 01-12-17.

SUNDSVALL 2002-02-19
Ex officio

Catarina Olsson
CATARINA OLSSON



AGREEMENT

Fyrtech Microelectronics AB in liquidation, organisation No. 556268-6344, below called "Fyrtech", with the address P O Box 142, 662 24 Åmål, and

Holgia AB, organisation No. 556095-1138, below called "Holgia", with the address P O Box 189, 671 24 Arvika,

have today made the following agreement ("The Agreement").

1. BACKGROUND

- 1.1 Fyrtech have previously made business including i.a. the development and sales of battery generators. Fyrtech are since December 1999 in liquidation, and Fyrtech's activities are being wound up.
- 1.2 The parties have now agreed to settle their transactions in accordance with this Agreement.

2. ASSIGNMENT OF ASSETS

- 2.1 Fyrtech assigns to Holgia as of 8 March 2000, below called "Takeover Day", the following assets:
 - (a) Fyrtech's stock of battery generators (102 pcs), test and examination units (24 pcs), and semifabricated top cupboards and bottom cupboards (32 pcs);
 - (b) Fyrtech's stock of components, spare parts, semiproducts, etc according to Enclosure 1;
 - (c) Movables and fixed assets according to Enclosure 2;
 - (d) All technical documentation referring to the products according to item (a) above;
 - (e) Fyrtech's claim on Holgia for SEK xxxx including VAT.

3. PURCHASE SUM, ETC

- 3.1 The purchase sum for the assets of item 2 (The Purchase Sum) shall amount to totally SEK xxxx, excluding VAT.

(The handwritten part of at the top of page 2)

The amount of SEK xxxx is paid on the Takeover Day, 8 March 2000, and the remaining cash amount SEK xxxx shall be paid within 10 days, i.e. by 17 March 2000.

3.2 The Purchase Sum shall be paid by Holgia in the following way:

- (i) the amount of SEK xxxx and VAT shall be paid cash by Holgia to Fyrtech as soon as possible after signing through deposition in Fyrtech's name on a client account with Advokatfirman Vinge KB in Malmö (bank giro account 843-0340) with an instruction to Advokatfirman Vinge KB that payment to Fyrtech is only allowed upon Holgia's written confirmation that the assets of item 2 have been received, or to any of the parties in accordance with the parties' common instruction, and
- (ii) the amount of SEK xxxx excluding VAT shall be paid through concession of the claim by the same amount as Holgia has on Fyrtech.

3.3 Fyrtech shall on the Takeover Day place the assigned assets at Holgia's disposal by giving Holgia the possibility to collect the assets in Fyrtech's plant in Åmål. Holgia shall themselves stand the costs in connection with the collection and transport of the assets. In connection with the collection, Holgia shall give a written confirmation according to item 3.2 (i).

4. GUARANTEES AND ACQUITTANCE

4.1 The assets indicated in item 2 are assigned by Fyrtech in the present condition, and Fyrtech do not give any guarantees regarding – and Holgia release Fyrtech from all responsibility for – the condition and field of application of the assets, and the condition of the assets in any other respect. The Purchase Sum for the assets has been determined with special regard to the stipulations of this item 4.

5. TOTAL SETTLEMENT OF TRANSACTIONS

5.1 When Holgia have paid the Purchase Sum according to item 3 of this Agreement, the parties agree to all transactions between Fyrtech and Holgia, and all transactions between Fyrtech and all parties close to Holgia, including Battery Tech Sweden AB (organisation No. 556554-4425), Karlstads Battery AB (organisation No. 556561-3006), Macbat AB (previously Battery Tech. Development Sweden AB) (organisation No. 556555-9704), and Åke Johansson (personal code No. 430316-6419) being completely and finally settled, and the parties herewith certify that they do not have any further claim on each other.

6. MISCELLANEOUS

- 6.1 All amendments or additions to this Agreement shall be made in writing by both Fyrtech and Holgia in order to be valid.
- 6.2 Any publication of this Assignment and the consequences of it shall be made in agreement between the parties. Furthermore, both parties shall be bound by secrecy regarding the circumstances with the counterparty, which the party has taken part of in connection with the establishment of this Agreement.

This Agreement has been established in two (2) originals, of which Fyrtech and Holgia has received one each.

Karlstad, 7 March 2000

Karlstad, 7 March 2000

FYRTECH MICROELECTRONICS AB
IN LIQUIDATION

HOLGIA AB

(Signature)

(Signature)

The final settlement of the transactions according to item 5 above is herewith confirmed.

Karlstad, 7 March 2000

Karlstad, 7 March 2000

BATTERY TECH SWEDEN AB

KARLSTAD BATTERYCARE AB

(Signature)

(Signature)

Karlstad, 7 March 2000

Karlstad, 7 March 2000

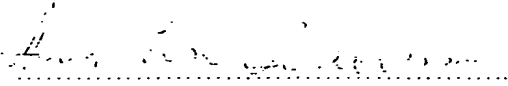
MACBAT AB
(PREVIOUSLY BATTERY TECH
DEVELOPMENT SWEDEN AB)

(Signature)

(Signature)
Åke Johansson

I, the undersigned, Anna-Lisa Andersson of Uddeholm, Sweden, who is well acquainted with the Swedish and English languages, do herewith certify that this is a true translation of the "Avtal" signed on 7 March 2000

Uddeholm, August 7, 2002


Anna-Lisa Andersson

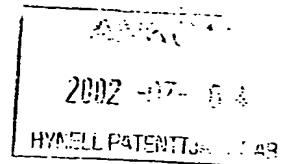
4 Jul 02 10:13
4. Juli 2002 9:47

Ake Johansson
MACP 0570 91490

0570 91490
0570 91490

P. 1

AVTAL



Fyrtech Microelectronics AB i likvidation, reg nr 556268-6344, nedan kallat "Fyrtech", med adress Box 142, 662 24 Åmål, och

Holgia AB, reg nr 556095-1138, nedan kallat "Holgia", med adress Box 189, 671 24 Arvika, har denna dag träffat följande avtal ("Avtalet").

1. BAKGRUND

- 1.1 Fyrtech har tidigare bedrivit verksamhet bland annat innefattande utveckling och försäljning av batteriregeneratorer. Fyrtech är sedan december 1999 försatt i likvidation och verksamheten i Fyrtech är under avveckling.
- 1.2 Parterna har nu överenskommit att reglera sina mellanhavanden i enlighet med vad som framgår av detta Avtal.

2. ÖVERLÅTELSE AV TILLGÅNGAR

- 2.1 Fyrtech överlåter till Holgia per den 8 mars 2000, nedan kallad "Tillträdesdagen", följande tillgångar:

- (a) Fyrtechs lager av batteriregeneratorer (102 stycken), test- och provenheter (24 stycken) samt över- och undersköp i halvfabrikat (32 stycken);
- (b) Fyrtechs lager av komponenter, reservdelar, halvfabrikat, m m, enligt vad som anges i Bilaga 1;
- (c) De inventarier och anläggningstillgångar som anges i Bilaga 2;
- (d) Samtlig teknisk dokumentation hänförlig till produkterna enligt punkt (a) ovan;
- (e) Fyrtechs fordran på Holgia om [redacted] kronor inkl. mervärdesskatt.

3. KÖPESKILLING, M M

- 3.1 Köpeskillingen för de i punkt 2 angivna tillgångarna ("Köpeskillingen") skall uppgå till totalt [redacted] kronor exklusive mervärdesskatt.

4 Juli 2002 9:47

MA

0570 91490

Nr. 3280

S. 2

[redacted] kronor avlägges på tillträdesdagen
00-03-08, resterande kontantbelopp
[redacted] Kronor skall avlägges inom
10 dagar, senast 00-03-17.

3.2 Köpeskillingen skall av Holgia erläggas enligt följande:

- (i) med [redacted] kronor plus mervärdesskatt att erläggas kontant av Holgia till Fyrtech snarast efter detta Avtals undertecknande genom deposition i Fyrtechs namn på klientmodelskonto hos Advokatfirman Vinge KB i Malmö (bankgiro 843-0340), med instruktion till Advokatfirman Vinge KB att pengarna får utbetalas till Fyrtech endast efter Holgias skriftliga bekräftelse av att de i punkt 2 angivna tillgångarna mottagits, eller till någon av parterna i enlighet med parternas gemensamma instruktion, samt
- (ii) med [redacted] kronor exklusive mervärdesskatt att erläggas genom eftergift av den fordran om samma belopp som Holgia har på Fyrtech.

3.3 Fyrtech skall på Tillträdesdagen till Holgia tillhandahålla de överlåtna tillgångarna till Holgia genom att bereda Holgia möjlighet att avhämta tillgångarna i Fyrtechs lokaler i Ämål. Holgia skall själv svara för samtliga kostnader i samband med tillgångarnas avhämtning och transport. Holgia skall i samband med avhämtandet av tillgångarna avge sådan skriftlig bekräftelse som anges ovan i punkt 3.2 (i).

4. GARANTIER OCH FRISKRIVNING

4.1 De i punkt 2 angivna tillgångarna överläts av Fyrtech i befintligt skick och Fyrtech lämnar inga som helst garantier avseende - och Holgia friskriver Fyrtech från allt ansvar för - tillgångarnas skick och användningsområde och tillgångarnas beskaffenhet i varje annat avseende. Köpeskillingen för tillgångarna har fastställts i särskilt beaktande av bestämmelserna i denna punkt 4.

5. FULLSTÄNDIG REGLERING AV MELLANHAVANDEN

5.1 Sedan Holgia erlagt Köpeskillingen enligt punkt 3 i detta Avtal är parterna ense om att samtliga mellanhavanden mellan Fyrtech och Holgia, och samtliga mellanhavanden mellan Fyrtech och samtliga till Holgia hörande parter, inklusive Battery Tech Sweden AB (reg nr 556554-4425), Karlstads Batterycare AB (reg nr 556561-3006), Macbat AB (Ed. Battery Tech Development Sweden AB) (reg nr 556555-9704) och Åke Johansson (pers nr 430316-6419), är fullständigt och slutligt reglerade och parterna bekräftar härmed att de inte har några ytterligare krav mot varandra.

6. ÖVRIGT

- 6.1 Alla ändringar och tillägg till detta Avtal skall ske skriftligen och undertecknas av både Fyrtech och Holgia för att äga giltighet.
- 6.2 Allt offentliggörande av detta Avtal och vad som följer därav skall ske i samförstånd mellan parterna. I övrigt skall alltså part iakttaga tystnadsplikt beträffande de respektive

förhållanden rörande motparten som kommit parten till del i samband med detta Avtals tillkomst.

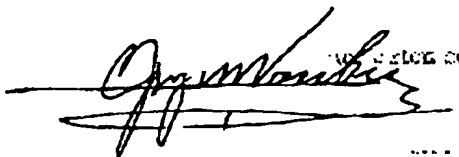
Detta Avtal har upprättats i två (2) exemplar, varav Fyrtech och Holgia tagit var sitt.

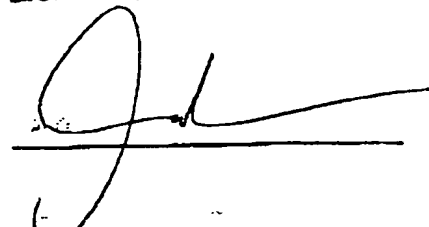
Karlstad den 7 mars 2000

Karlstad den 7 mars 2000

FYRTECH MICROELECTRONICS AB
I LIKVIDATION

HOLGIA AB





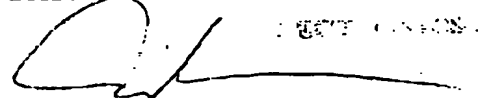
De slutliga regleringen av mellanhavanden enligt punkt 5 ovan bekräftas härmed.

Karlstad den 7/3 2000

Karlstad den 7/3 2000

BATTERY TECH SWEDEN AB

KARLSTADS BATTERYCARE AB





ENG. FULLMÄKT

Karlstad den 7 mars 2000

Karlstad den 7 mars 2000

MACBAT AB
(F.D. BATTERY TECH
DEVELOPMENT SWEDEN AB)

Ake Johansson

HYNNELL

PATENTTJÄNST AB

PATENT, TRADE MARK & DESIGN REGISTRATION SERVICES
EUROPEAN PATENT & TRADE MARK ATTORNEYS

Peter Kylin, patentombud, mobil +46 70 682 77 07
Magnus Hynell, patentombud, mobil +46 70 652 27 74
Annika Björkman, patentombud, mobil +46 70 348 54 58
Ivar Andréasson, patentombud, mobil +46 70 216 63 23
Magnus Aspeby, patentombud, "of counsel"
Lars Johansson, patentombud, "of counsel"
Hans Carlström, patentingenjör
Eva Lena Jansson, varumärkesombud, mobil +46 70 623 50 54

PÅMINNELSE

Datum: 2002-04-18
Er ref:
Vår ref: P1446-115.. -131.., -204.., -221.., -406APCT

Frank Lindqvist
Jargeauringen 30
DE-68799 REILINGEN
Tyskland

Henrik Lindqvist
Bergängsvägen 9
662 36 ÅMÅL

"MACBAT" -

Patentansökningar i Norge, Tjeckien, Kanada, USA och Sydafrika

Hej,

I syfte att kunna föra ovan angivna patentansökningar vidare behöver bifogade handlingar undertecknas och returneras. Skulle Ni ha några frågor kan Ni vända Er direkt till Peter Kylin, 070-6827707. Vi emotser handlingarna i retur senast 30 april 2002.

Med vänliga hälsningar

HYNNELL PATENTTJÄNST AB



Peter Kylin

Bil.

PÅMINNELSE

Post- och besöksadress:

Patron Caris väg 2
SE-683 40 HAGFORS/UDDEHOLM
Sverige

Kontor:

Hagfors
Eslöv
Lund
Karlstad
Paris

Telefon:

0563-235 20
0413-301 05
046-38 91 90
054-18 82 86
033-24 02 02

Telefax:

0563-236 96

Bankgiro:

374-1493

E-post:

headoffice@hynell.se

Postgiro:

91.19 82-7

HYNELL

PATENTTJÄNST AB

PATENT, TRADE MARK & DESIGN REGISTRATION SERVICES
EUROPEAN PATENT & TRADE MARK ATTORNEYS

Peter Kylin, patentombud, mobil +46 70 682 77 07
Magnus Hynell, patentombud, mobil +46 70 652 27 74
Annika Björkman, patentombud, mobil +46 70 348 54 58
Ivar Andréasson, patentombud, mobil +46 70 216 63 23
Magnus Aspeby, patentombud, "of counsel"
Lars Johansson, patentombud, "of counsel"
Hans Carlström, patentingenjör
Eva Lena Jansson, varumärkesombud, mobil +46 70 623 50 54

PÅMINNELSE

2002 -07-

REL

Datum: 2002-04-18

Er ref:

Vår ref: P1446-115..-131..-204..-221..-406APCT

Frank Lindqvist
Jargeauringen 30
DE-68799 REILINGEN
Tyskland

Henrik Lindqvist
Bergsängsvägen 9
662 36 ÅMÅL

"MACBAT" -

Patentansökningar i Norge, Tjeckien, Kanada, USA och Sydafrika

Hej,

I syfte att kunna föra ovan angivna patentansökningar vidare behöver bifogade handlingar undertecknas och returneras. Skulle Ni ha några frågor kan Ni vända Er direkt till Peter Kylin, 070-6827707. Vi emotser handlingarna i retur senast 30 april 2002.

Med vänliga hälsningar

HYNELL PATENTTJÄNST AB



Peter Kylin

Bil.

PÅMINNELSE

Post- och besöksadress:

Patron Carls väg 2
SE-683 40 HAGFORS/UDDEHOLM
Sverige

Kontor:

Hagfors
Eslöv
Lund
Karlstad

Telefon:

0563-235 20
0413-301 05
046-38 91 90
054-18 82 86

Telefax:

0563-236 96

Bankgiro:

374-1493

E-post:

headoffice@hynell.se

Postgiro:

91.19 82-7

RULE 63 (37 C.F.R. 1.63)
DECLARATION AND POWER OF ATTORNEY FOR UTILITY OR DESIGN PATENT APPLICATION IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

☒ Declaration Submitted with Initial Filing or ☐ Declaration Submitted after Initial Filing (surcharge 37 CFR 1.16 (e) required)
 As a below named inventor, I hereby declare that my residence, post office address and citizenship are as stated below next to my name, and I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the **INVENTION ENTITLED "METHOD AND DEVICE FOR BATTERIES"**, the specification of which is:

☒ attached hereto as Attorney Docket No. 627-P1446, OR
☐ was filed on (MM/DD/YYYY) _____ As United States Application Number (Attorney Docket No. _____) or U.S. National Phase of PCT International Application No. PCT/SE00/01049.

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above. I acknowledge the duty to disclose all information known to me to be material to patentability as defined in 37 C.F.R. 1.56 including for continuation-in-part application, material information which becomes available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

I hereby claim foreign priority benefits under 35 U.S.C. 119(a) -(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT international Application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or any PCT international application having a filing date before that of the application on which priority is claimed.

PRIOR FOREIGN APPLICATION(S)			Priority Claimed		Certified Copy Attached	
Number	Country	Foreign Filing Date (MM/DD/YYYY)	Yes	No	Yes	No
SE 9902286-5	SWEDEN	06/15/1999	X			X

I hereby claim the benefit under 35 U.S.C. 119(e) of any United States provisional Application(s) listed below.

PRIOR U.S. PROVISIONAL, NONPROVISIONAL AND/OR PCT APPLICATION(S)				Priority Claimed	
Application No. (series code/serial no.)	Filing Date (MM/DD/YYYY)	Status	Yes	No	
PCT/SE00/01049	05/24/2000	PENDING			X

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

I hereby appoint the registered practitioners at **Manelli, Denison & Selter, pllc**, represented by **Customer No.: 20736** to prosecute this application and transact all business in the U.S. Patent and Trademark Office in connection therewith. Direct all correspondence to **Customer No.: 20736**.

1. INVENTOR'S SIGNATURE: _____ Date _____
 Inventor's Name (typed) Frank Lindqvist
 First Middle Initial Family Name Country of Citizenship
 Residence (City) Reilingen (State) Germany
 Post Office Address (Include Zip Code) Jargeuringen 30, DE-68799 Reilingen, Germany

2. INVENTOR'S SIGNATURE: _____ Date _____
 Inventor's Name (typed) Henrik Lindqvist
 First Middle Initial Family Name Country of Citizenship
 Residence (City) Amal (State) Sweden
 Post Office Address (Include Zip Code) Bergangsvagen 9, SE-662 36 Amal, Sweden

Fyll i avsnitt	Inlämningsdatum	Adressat	Postnummer (för utrikes försändelse hela adressen)
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- -	Finnhede AB		671 70 EDANE
- -	HAMILTON = CO		Box 606, 65713 KARLSBURG
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- 1 -	Birch Stewart		FALLS CHURCH
- 1 -	NHL Enterprises		New York
- 1 -	Clarke Model		E 28001 MADRID
- -	Patent of Registration		1012 42 STOCKHOLM
1/7-02	Gerlitta Muskinas		685 23 TORSBY
- -	Patente Registrering		826 27 SÖDERHAMN
5/7-02	Clarke, Modeta Co LDA		P-1269-163 LISSABON, PORTUGAL
- 1 -	PRV		826 27 Söderhamns
12/7-02	Franziska Lindgren		DE-68799 Rellinghausen
1 -	Hennrich Lindgren		66636 ARAU
- -	Oficina Garcia		ES-28006 MADRID
- 1 -	A Tecnal		PT-1050-018 LISBOA

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[illegible]

1 Om ossbelopp inte har angivits är försändelsen rekommenderad.

2 pf = postförsäkring, x = expressutdelning, flyg = flygbefordran mot tilläggsavgift, mb = mottagningsbevis, l-utd = lördagsutdelning

13.Feb. 2003 11:40

Nr.8942 S. 3/6

Date: 22 January 2003

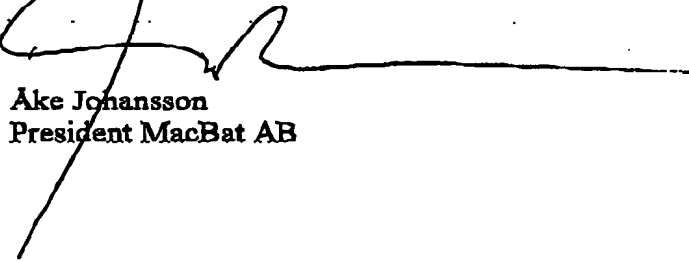
Frank Lindqvist
Jargeauringen 30
DE-68799 REILINGEN
Tyskland

Application No. 10/009302
Method and device for batteries

With letters from our patent agency, Hynell Patenttjänst AB, you have already a number of times been requested to sign the needed Assignment and Declaration documents in the above identified US patent application.

As the president of MacBat AB I herewith again ask you to sign the enclosed Assignment and Declaration to safeguard the existence of this patent application, and to thereby increase our chances of a successful development of the embodiment of the MacBat process related hereto. The matter is very urgent and we therefore request you to use the enclosed prestamped envelope as soon as possible, since we will need to have them by the latest of February 12, 2003.

Sincere regards,

A handwritten signature in black ink, appearing to be 'Ake Johansson', written over a horizontal line.

Ake Johansson
President MacBat AB

13.Feb. 2003 11:40

Nr. 8942 S. 4/6

Dat : 22 January 2003

Henrik Lindqvist
Bergängsvägen 9
662 36 AMÅL

Application No. 10/009302
Method and device for batteries

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Sincere regards,



Åke Johansson
President MacBat AB

Please return signed/recorded to:

Manelli Denison & Selter, PLLC
2000 M Street N.W., 7th Floor
Washington, D.C. 20036

USA Patent Appln.
Sole or Joint

For Inventions made outside USA
executed with or after application

Any. Dkt.

627-P1446

Client Ref.
P1446-331 APCTP

NONPROVISIONAL

ASSIGNMENT OF NONPROVISIONAL APPLICATION

NONPROVISIONAL

In consideration of the sum of Ten Dollars (\$10.00) and other good and valuable consideration paid to each of the undersigned, to wit:

INSERT
NAME(S) OF
INVENTOR(S)

(1) Frank Lindqvist	(4)
(2) Henrik Lindqvist	(5)
(3)	[] x box if continued on page 2

th receipt and sufficiency of which are hereby acknowledged by the undersigned who at the request of, hereby sell(s), assign(s) and transfer(s) unto:

INSERT
NAME(S) OF
ASSIGNEE(S)
& ADDRESS(ES)

HOLGIA AKTIEBOLAG**P.O. Box 189****SE-671 24****Arvika, Sweden**

(hereinafter designated "ASSIGNEE") the entire right, title and interest for the United States of America as defined in 35 U.S.C. 100, in the invention and all applications including any and all divisions, continuations, substitutes, and reissues there of; and all resulting patents, known as

TITLE OF
INVENTION

METHOD AND DEVICE FOR BATTERIES

for which the undersigned executed an application for Letters Patent of the United States of America:

NOTE 66
(Complete
Line A, B and/or C)

(A) ☒ In U.S. National Phase of PCT/SE00/01049(B) ☐ on(C) ☐ In U.S. Appln. No. / filed

AND the undersigned hereby authorize(s) and request(s) the United States Commissioner of Patents and Trademarks to issue said Letters Patent to the said ASSIGNEE, for its interest as ASSIGNEE, its successors, assigns and legal representatives; the undersigned agree(s) that the attorney of record in said application shall hereinafter act on behalf of said ASSIGNEE;

AND the undersigned hereby agree(s) to testify and execute any papers for ASSIGNEE, its successors, assigns and legal representatives, deemed essential by ASSIGNEE to ASSIGNEE'S full protection and title in and to the invention hereby transferred.

NOTE 66 The undersigned hereby authorize(s) Manelli Denison & Selter, PLLC, of the above address to insert hereon any further identification necessary or desirable for recordation of this document.

INVENTOR(S)**DATE SIGNED****WITNESSES**

1)
Name: Frank Lindqvist

2)
Name: Henrik Lindqvist

3)
Name:

4)
Name:

5)
Name:

RULE 63 (37 C.F.R. 1.83)
DECLARATION AND POWER OF ATTORNEY FOR UTILITY OR DESIGN PATENT APPLICATION IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE

☒ Declaration Submitted with Initial Filing or ☐ Declaration Submitted after Initial Filing (surcharge 37 CFR 1.16 (e) required)
 As a below named inventor, I hereby declare that my residence, post office address and citizenship are as stated below next to my name, and I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the **INVENTION ENTITLED** **"METHOD AND DEVICE FOR BATTERIES"**, the specification of which is:

☒ attached hereto as Attorney Docket No. 627-P1446, OR
☐ was filed on (MM/DD/YYYY) _____ As United States Application Number (Attorney Docket No. _____) or
 U.S. National Phase of PCT International Application No. PCT/SE00/01049.

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above. I acknowledge the duty to disclose all information known to me to be material to patentability as defined in 37 C.F.R. 1.56 including for continuation-in-part application, material information which becomes available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT International Application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or any PCT international application having a filing date before that of the application on which priority is claimed.

PRIOR FOREIGN APPLICATION(S)

Number	Country	Foreign Filing Date (MM/DD/YYYY)	Priority Claimed		Certified Copy Attached	
			Yes	No	Yes	No
SE 9902286-5	SWEDEN	06/15/1999	X			X

I hereby claim the benefit under 35 U.S.C. 119(e) of any United States provisional Application(s) listed below.

PRIOR U.S. PROVISIONAL, NONPROVISIONAL AND/OR PCT APPLICATION(S)

Application No. (series code/serial no.)	Filing Date (MM/DD/YYYY)	Status	Priority Claimed	
			Yes	No
PCT/SE00/01049	05/24/2000	PENDING	X	

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

I hereby appoint the registered practitioners at Manelli, Denison & Selter, PLLC, represented by Customer No.: 20736 to prosecute this application and transact all business in the U.S. Patent and Trademark Office in connection therewith. Direct all correspondence to Customer No.: 20736.

1. INVENTOR'S SIGNATURE:

Inventor's Name (typed)		Date	
First	Middle Initial	Family Name	Country of Citizenship
Frank		Lindqvist	Germany
Residence (City) Reilingen (State)			
Post Office Address (Include Zip Code) Langevingen 30, DE-68799 Reilingen, Germany			

2. INVENTOR'S SIGNATURE:

Inventor's Name (typed)		Date	
First	Middle Initial	Family Name	Country of Citizenship
Henrik		Lindqvist	Sweden
Residence (City) Amal (State)			
Post Office Address (Include Zip Code) Bergangavagen 9, SE-662 36 Amal, Sweden			

Henrik Lindqvist
Bergängsvägen 9
662 36 Åmål

2003-02-28

HYNELL Patenttjänst AB
Peter Kylin

Copy of letter/fax sent to Macbat AB in Arvika

Your letter of January 21st 2003.

I was more than astonished to receive a further letter, which arrived today.

Your letter simply repeats your request for me to sign the document.
Therefore the answer remains the same:

You have not yet submitted the information promised by your lawyer, Mr. Cederlöv, about the reason, why Holgia AB (Macbat AB) should have the right to breach our agreement concerning the patent transfer from me to Holgia AB and why I in such a case I should be obliged to support you. Holgia AB should have acquired the rights from Fyrtech Microelectronics AB and not from Henrik and Frank Lindqvist.

Mr. Cederlöv promised to "soon" send documents about this to MICROLIND AB's lawyer in Stockholm, Bergling & Partner, on April 25th, 2002. I am today still waiting for this justification of Holgia's breach of the agreement.

As you have declared in writing, that you are not going to fulfil your commitments from the patent transfer, I will not sign any documents before this matter is settled.

It is even extremely doubtful that Holgia AB has any rights whatsoever to the concerned invention after Holgia terminated unilaterally the agreement with inventors without their consent.

Sincerely


Henrik Lindqvist

THIS LETTER HAS ALSO BEEN SENT BY MAIL TO Macbat AB, Box 189, 67124 Arvika.

För Kåre och HYNELL Patent Byrå
Henrik Lindqvist
Bergängsvägen 9
662 36 Åmål

MACBAT AB
Åke Johansson
Box 189
67124 Arvika



2003-02-12

*se tidigare
korrespond*

Your letter of January 22nd, 2003.

I was more than astonished to receive your letter and further more so to read your statement, that I should have been requested a number of times by your patent agency to sign the enclosed document. This statement is simply not true.

Your patent agency contacted me in the end of April 2002 and asked me to sign several documents regarding the Macbat patent. I promptly contacted your patent agency and declared that I was waiting for a explanation from your lawyer, Mr. Cederlöv, about the reason, why Holgia AB should have the right to breach our agreement concerning the patent transfer from me to Holgia AB and why I in such a case should be obliged to support you. Holgia AB should have acquired the rights from Fyrtech Microelectronics AB and not from Henrik and Frank Lindqvist. Mr. Cederlöv promised to "soon" send documents about this to MICROLIND AB's lawyer in Stockholm, BURGLING & PARTNERS, on April 25th, 2002. I am today still waiting for this justification of HOLGIA's breach of the agreement.

As you have declared in writing, that you are not going to fulfil your commitments from the patent transfer, I will not sign any documents before this matter is settled.

It is pities that neither you nor Macbat AB has so far not given any sign at all that you want to reach an amicable settlement.

It is solemnly up to you to solve the issue, the simplest solution is that you declare that you and Macbat AB are going to fulfil all commitments and agreements in the Macbat matter. As you certainly understand a "simple" statement is not enough to convince me of your earnestness, I therefore require a legally binding declaration from you and Macbat AB guaranteeing the fulfilment of your commitments and agreements.

Sincerely


Henrik Lindqvist

THIS LETTER HAS ALSO BEEN SENT BY MAIL TO Macbat AB, Box 189, 67124 Arvika.

+49 6205 208790

Frank Lindqvist
Jargeauring 30
D-68799 Reilingen

2003-02-12

MACBAT AB
Åke Johansson
Box 189
67124 Arvika
Schweden

In advance per facsimile

Your letter of January 22nd, 2003.

Your letter arrived to us on February 12th, 2003 and I was more than astonished about your statement, that I should have been requested a number of times by your patent agency to sign the enclosed document. This statement is simply not true.

Your patent agency contacted me in the end of April 2002 and asked me to sign several documents regarding the Macbat patent.

I promptly contacted your patent agency and declared that I was waiting for a explanation from your lawyer, Mr. Cederlöv, about the reason, why Holgia AB should have the right to breach our agreement concerning the patent transfer from me to Holgia AB and why I in such a case should be obliged to support you. Holgia AB should have acquired the rights from Fyrtech Microelectronics AB and not from Henrik and Frank Lindqvist.

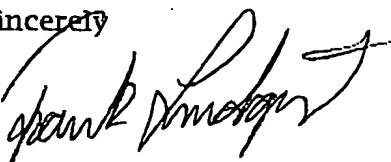
Mr. Cederlöv promised to "soon" hand over such a document to Lindqvist Automation GmbH's lawyer, Mikael von Schedvin, on April 25th, 2002. I am today still waiting for this justification of Holgia's breach of the agreement.

As you have declared in writing, that you are not going to fulfil your commitments from the patent transfer, I will not sign any documents before this matter is settled.

It is a pity that neither you nor Macbat AB has so far not given any sign at all that you want to reach an amicable settlement.

It is solemnly up to you to solve the issue. The simplest solution is that you declare that you and Macbat AB are going to fulfil all commitments and agreements in the MACBAT matter. As you certainly understand a "simple" statement is not enough to convince me of your earnestness, I therefore require a legally binding declaration from you and Macbat AB guaranteeing the fulfilment of your commitments and agreements. A second possibility would be that you present an acceptable suggestion for an amicable settlement.

Sincerely



Frank Lindqvist

Frank Lindqvist * Jargeauring 30 * D-68799 Reilingen
Telefon +49-(0)6205-208788 * Telefax +49-(0)6205-208790
Email frank@lindqvist.net * URL www.lindqvist.net

Frank Lindqvist
Jargeauringen 30
DE-68799 REILINGEN
Tyskland

Application No. 10/009302
Method and device for batteries

With letters from our patent agency, Hynell Patenttjänst AB, you have already a number of times been requested to sign the needed Assignment and Declaration documents in the above identified US patent application.

As the president of MacBat AB I herewith again ask you to sign the enclosed Assignment and Declaration to safeguard the existence of this patent application, and to thereby increase our chances of a successful development of the embodiment of the MacBat process related hereto. The matter is very urgent and we therefore request you to use the enclosed prestamped envelope as soon as possible, since we will need to have them by the latest of February 12, 2003.

Sincere regards,



Åke Johansson
President MacBat AB

[illegible][illegible]

1 Om assbelopp inte har angivits är försändelsen rekommenderad.

1 Om överskottet inte har använts av försäkringsreklamationsrådet.
2 Pf = postförsäkringskost, x = ersättningsutdelning, flyg = flygbefordran mot tilläggsskatt, mb = motottningsbevis, l-utd = lördagsutdelning.
För postförsäkringskost skall även postförsäkringsbeloppet anges.

3 För paket till utlandet anges alltid postavgiften. För övriga försändelser förs detta endast om avsändaren så beaktar. För postförskick skall även postförsckottsbeloppet anges.

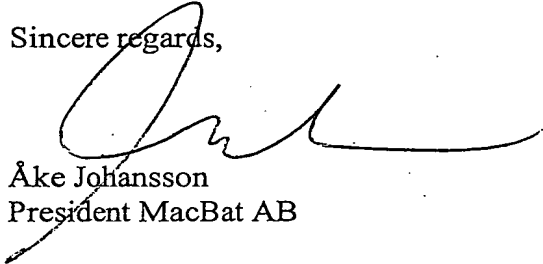
Date: 21 February 2003

Henrik Lindqvist
Bergängsvägen 9
662 36 ÅMÅL

U.S. Application Serial No. 10/009,302
Method and device for batteries

You have already a number of times been requested to sign and date the needed Assignment and Declaration documents in the above identified US patent application. As mentioned in my latest letter of 22 January 2003, the matter is very urgent. We again ask you to send the executed enclosed documents, i.e. Assignment and Declaration, using the enclosed postage stamped envelope, by the latest of 28 February 2003.

Sincere regards,



Åke Johansson
President MacBat AB

Encl:

Complete copy of U.S. patent application serial No. 10/009,302, including claims
and drawings

Declaration

Assignment

Date: 21 February 2003

Frank Lindqvist
Jargeauringen 30
DE-68799 REILINGEN
Tyskland

U.S. Application Serial No. 10/009,302
Method and device for batteries

You have already a number of times been requested to sign and date the needed Assignment and Declaration documents in the above identified US patent application. As mentioned in my latest letter of 22 January 2003, the matter is very urgent. We again ask you to send the executed enclosed documents, i.e. Assignment and Declaration, using the enclosed postage stamped envelope, by the latest of 28 February 2003.

Sincere regards,



Åke Johansson
President MacBat AB

Encl:

Complete copy of U.S. patent application serial No. 10/009,302, including claims
and drawings

Declaration
Assignment

Please return signed/recorded to:

Manelli Denison & Selter, PLLC
2000 M Street, N.W., 7th Floor
Washington, D.C. 20036

USA Patent Appln.
Sole or Joint

For Inventions made outside USA
executed with or after application

Atty. Dkt.

627-P1446

Client Ref.
P1446-221 APCT

NONPROVISIONAL

ASSIGNMENT OF NONPROVISIONAL APPLICATION

NONPROVISIONAL

In consideration of the sum of Ten Dollars (\$10.00) and other good and valuable consideration paid to each of the undersigned, to wit:

INSERT
NAME(S) OF
INVENTOR(S)

(1) Frank Lindqvist	(4)
(2) Henrik Lindqvist	(5)
(3)	[] x box if continued on page 2

the receipt and sufficiency of which are hereby acknowledged by the undersigned who at the request of, hereby sell(s), assign(s) and transfer(s) unto:

INSERT
NAME(S) OF
ASSIGNEE(S)
& ADDRESS(ES)

HOLGIA AKTIEBOLAG

P.O. Box 189

SE-671 24

Arvika, Sweden

(hereinafter designated "ASSIGNEE") the entire right, title and interest for the United States of America as defined in 35 U.S.C. 100, in the invention and all applications including any and all divisions, continuations, substitutes, and reissues thereof; and all resulting patents, known as

TITLE OF
INVENTION

METHOD AND DEVICE FOR BATTERIES

for which the undersigned executed an application for Letters Patent of the United States of America:

NOTE 6 6
(Complete
line A, B and/or C)

(A) ☒ in U.S. National Phase of PCT/SE00/01049(B) ☐ on(C) ☐ in U.S. Appln. No. / filed

AND the undersigned hereby authorize(s) and request(s) the United States Commissioner of Patents and Trademarks to issue said Letters Patent to the said ASSIGNEE, for its interest as ASSIGNEE, its successors, assigns and legal representatives; the undersigned agree(s) that the attorney of record in said application shall hereinafter act on behalf of said ASSIGNEE;

AND the undersigned hereby agree(s) to testify and execute any papers for ASSIGNEE, its successors, assigns and legal representatives, deemed essential by ASSIGNEE to ASSIGNEE'S full protection and title in and to the invention hereby transferred.

NOTE 6 6 The undersigned hereby authorize(s) Manelli Denison & Selter, PLLC, of the above address to insert hereon any further identification necessary or desirable for recordation of this document.

INVENTOR(S)

DATE SIGNED

WITNESSES

1)

Name: Frank Lindqvist

2)

Name: Henrik Lindqvist

3)

Name:

4)

Name:

5)

Name:

RULE 63 (37 C.F.R. 1.63)
DECLARATION AND POWER OF ATTORNEY FOR UTILITY OR DESIGN PATENT APPLICATION IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE

☒ Declaration Submitted with Initial Filing or ☐ Declaration Submitted after Initial Filing (surcharge 37 CFR 1.16 (e) required)
As a below named inventor, I hereby declare that my residence, post office address and citizenship are as stated below next to my name, and I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the INVENTION ENTITLED
"METHOD AND DEVICE FOR BATTERIES", the specification of which is:

☒ attached hereto as Attorney Docket No. 627-P1446, OR
☐ was filed on (MM/DD/YYYY) _____ As United States Application Number (Attorney Docket No. _____) or
U.S. National Phase of PCT International Application No. PCT/SE00/01049.

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above. I acknowledge the duty to disclose all information known to me to be material to patentability as defined in 37 C.F.R. 1.56 including for continuation-in-part application, material information which becomes available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

I hereby claim foreign priority benefits under 35 U.S.C. 119(a) -(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT international Application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or any PCT international application having a filing date before that of the application on which priority is claimed.

PRIOR FOREIGN APPLICATION(S)

Number	Country	Foreign Filing Date (MM/DD/YYYY)	Priority Claimed		Certified Copy Attached	
			Yes	No	Yes	No
SE 9902286-5	SWEDEN	06/15/1999	X			X

I hereby claim the benefit under 35 U.S.C. 119(e) of any United States provisional Application(s) listed below:

PRIOR U.S. PROVISIONAL, NONPROVISIONAL AND/OR PCT APPLICATION(S)

Application No. (series code/serial no.)	Filing Date (MM/DD/YYYY)	Status pending, abandoned, patented	Priority Claimed	
			Yes	No
PCT/SE00/01049	05/24/2000	PENDING		X

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

I hereby appoint the registered practitioners at **Manelli, Denison & Selter, pllc**, represented by Customer No.: 20736 to prosecute this application and transact all business in the U.S. Patent and Trademark Office in connection therewith. Direct all correspondence to Customer No.: 20736.

1. INVENTOR'S SIGNATURE:

Inventor's Name (typed)			Date	
First	Middle Initial	Family Name		
Frank		Lindqvist		
Residence (City)	Reilingen	(State)	Germany	
Post Office Address (Include Zip Code) Jargeuringen 30, DE-68799 Reilingen, Germany				

2. INVENTOR'S SIGNATURE:

Inventor's Name (typed)			Date	
First	Middle Initial	Family Name		
Henrik		Lindqvist		
Residence (City)	Amal	(State)	Sweden	
Post Office Address (Include Zip Code) Bergangsvagen 9, SE-662 36 Amal, Sweden				

CLAIMS

1. Method for treatment of accumulators having at least one cell, preferably lead batteries, in which a varying direct current from a charging unit is applied in intermittent current supply periods, which are interrupted by current free pauses, the direct current being sufficient to generate gas in the accumulator, characterised in that said treatment constitutes a regeneration process, wherein said current supply periods have a length of between 0.01 and 0.5 seconds, a current level during said current supply periods amounting to between 80 and 1000 A, said pauses have a length of 1-20 seconds, and wherein process data, for at least one cell in the accumulator, is registered during the treatment process, which process data is used in order to control the treatment process.
2. Method according to claim 1, characterised in that a conductivity in an electrolyte in the cell, and/or a temperature in the electrolyte in the cell constitutes said process data.
3. Method according to claim 1 or 2, characterised in that sensors for said process data are introduced down into the electrolyte in each cell where process data is to be registered.
4. Method according to any of the preceding claims, characterised in that what is controlled during the treatment process is a length of said current supply periods, which may be between 0.01 and 0.5 seconds, preferably at least 0.1 seconds, even more preferred at least 0.15 seconds and 0.4 seconds at the most, preferably 0.25 seconds at the most, a length of said pauses, which may be between 1-20 seconds, preferably 1-10 seconds and even more preferred 1-5 seconds, typically about 3 seconds, the current supply periods preferably being considerably shorter than the pauses.
5. Method according to any of the preceding claims, characterised in that a current is applied during the current supply periods, which current is strong enough in order for each cell in the accumulator to reach a voltage of at least 2.5 V during the current supply periods.
6. Method according to any of the preceding claims, characterised in that said current level during said current supply periods amounts to at least 110 A,

preferably at least 200 A and even more preferred at least 250 A, but 1000 A at the most.

- 5 7. Method according to any of claims 1-5, characterised in that a current level during said current supply periods is 150 A at the most, preferably 110 A at the most.
- 10 8. Method according to any of the preceding claims, characterised in that the treatment process is performed in a number of cycles, preferably 5-30 and even more preferred 5-20 cycles, each cycle consisting of a regeneration part of 2-8 hours, preferably 2-6 hours and most preferred about 6 hours, and a charge part, preferably using standard charging, i.e. using a continuous current supply, during 0.5-2 hours, preferably about 1 hour.
- 15 9. Method according to any of the preceding claims, characterised in that said registering of process data and said controlling, is continuously performed during the entire or essentially the entire treatment process.
- 20 10. Method according to any of claims 1-8, characterised in that said registering of process data is performed during a predetermined time period of the entire treatment period, preferably during start up of the treatment.
- 25 11. Method according to any of the preceding claims, characterised in that said registering of process data and controlling based on this process data, is individually performed for all or essentially all cells in the accumulator.
- 30 12. Method according to any of the preceding claims, characterised in that the total current running to the accumulator during the current supply periods is registered, preferably by surveying of a mean value for said process data for a small number of current supply periods, optimal control, and thereby optimal treatment, thereafter being ensured when the mean value of the succeeding current supply periods, remains in the main constant.
- 35 13. Method according to any of the preceding claims, characterised in that general data, for each individual accumulator, is used for the controlling of the treatment process, which general data preferably is chosen from the group consisting of name of the customer, date, accumulator manufacturer, type number

for the accumulator, type values for the accumulator, year of manufacture, time of the first operational use of the accumulator, time between previously performed treatments, type of device in which the accumulator is used, and which general data preferably is registered automatically at start up of the treatment process.

14. Method according to claim 13, characterised in that older general data and process data too, for other accumulators and/or for previous treatments of the specific accumulator, are used for the controlling of the treatment process.

15. Method according to claim 14, characterised in that access to said older general data and older process data is ensured by connection to a network having a common database for these data for different devices for the treatment of accumulators.

16. Method according to claim 15, characterised in that said network also is arranged to be used for the surveillance of the treatment process and/or for the upgrading of software for the treatment process.

17. Device for treatment of accumulators having at least one cell, preferably lead batteries, which device comprises a transformer having a primary coil adapted to be connected to the electricity supply network, a secondary coil, a rectifier connected to the secondary coil, a positive and a negative cable clip, adapted to be connected to an accumulator which is to be treated, and an automatic actuator connected to the primary coil for intermittent connecting and disconnecting of the electricity supply network with short current supply periods interrupted by current free pauses, characterised in that said device constitutes a device for a regeneration process, the device being arranged to conduct said current supply periods with a length of between 0.01 and 0.5 seconds, a current level during said current supply periods being arranged to amount to between 80 and 1000 A, and to conduct said pauses with a length of 1-20 seconds, and in that the device also comprises means for registering/measuring of process data, at least in one cell of the accumulator, and means for controlling the treatment process based on this process data.

18. Device according to claim 17, characterised in that sensors for registering/measuring a conductivity in an electrolyte in the cell, constitutes said means

for registering/measuring process data, and/or sensors for registering/measuring a temperature in the electrolyte in the cell, said registering/measuring preferably being arranged to be performed by opening of the accumulator and applying said sensors.

5

19. Device according to any of claims 17-18, characterised in that said means for registering/measuring process data are arranged to individually register/measure process data in all or essentially all cells of the accumulator, the treatment process preferably being arranged to be individually controlled in these cells, based on the process data for each cell.

10

20. Device according to any of claims 17-19, characterised in that said means for controlling the treatment process comprises a control unit, preferably a microcomputer, and means for dynamically, during the treatment process, altering the length of said current supply periods to between 0.01 and 0.5 seconds, preferably at least 0.1 seconds, even more preferred at least 0.15 seconds and 0.4 seconds at the most, preferably 0.25 seconds at the most, a length of said pauses, which may be between 1-20 seconds, preferably 1-10 seconds and even more preferred 1-5 seconds, typically about 3 seconds, the current supply periods preferably being considerably shorter than the pauses, and optionally, the current level used.

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21. Device according to any of claims 17-20, characterised in that the device is arranged to yield a current during said current supply periods, which current is strong enough in order for each cell in the accumulator to be brought to reach a voltage of at least 2.5 V during the current supply periods.

25

22. Device according to any of claims 17-21, characterised in that the current level during said current supply periods is at least 110 A, preferably at least 200 A and even more preferred at least 250 A, but 1000 A at the most.

30

23. Device according to any of claims 17-21, characterised in that the current level during said current supply periods is 150 A at the most, preferably 110 A at the most.

35

24. Device according to any of claims 17-23, characterised in means for the, preferably automatic, registering/feeding in of general data, for each indi-

vidual accumulator, which general data preferably is chosen from the group consisting of name of the customer, date, accumulator manufacturer, type number for the accumulator, type values for the accumulator, year of manufacture, time of the first operational use of the accumulator, time between previously performed treatments, type of device in which the accumulator is used.

5

25. Device according to claim 24, characterised in that said device comprises means for connecting it to a database, preferably via a network, for use of older general data and process data for previous treatment processes, for other accumulators and/or for previous treatments of the specific accumulator, in the controlling of the treatment process.

10

26. Device according to claim 25, characterised in that said network also is arranged to be used for the surveillance of the treatment process and/or for the upgrading of software for the treatment process.

15

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
21 December 2000 (21.12.2000)

PCT

(10) International Publication Number
WO 00/77911 A1

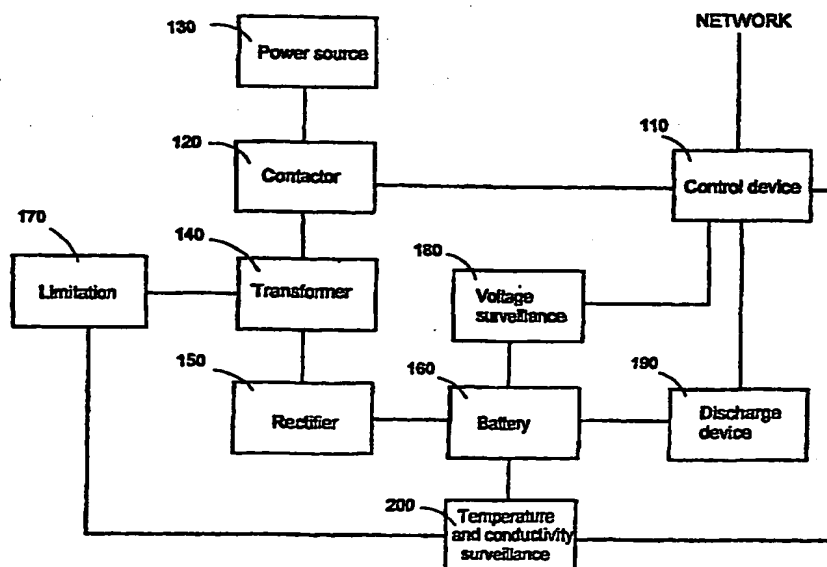
- (51) International Patent Classification⁷: H02J 7/00, H01M 10/44
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- (26) Publication Language: English
- (30) Priority Data:
9902286-5 15 June 1999 (15.06.1999) SE
- (71) Applicant (for all designated States except US): **HOLGIA AKTIEBOLAG** [SE/SE]; Box 189, S-671 24 Arvika (SE).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **LINDQVIST, Frank** [FI/DE]; Jargeuringen 30, D-68799 Reilingen (DE). **LINDQVIST, Henrik** [DE/SE]; Bergängsvägen 9, S-662 36 Åmål (SE).
- (74) Agents: **HYNELL, Magnus et al.**; Hynell Patenttjänst AB, Patron Carls Väg 2, S-683 40 Hagfors/Uddeholm (SE).
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, CZ (utility model), DE, DE (utility model), DK, DK (utility model), DM, DZ, EE, EE (utility model), ES, FI, FI (utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KR (utility model), KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (utility model), SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:

- With international search report.
- Before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments.

[Continued on next page]

(54) Title: METHOD AND DEVICE FOR BATTERIES



(57) Abstract: Method for treatment, in the form of regeneration, of accumulators having at least one cell, preferably lead batteries, in which a varying direct voltage from a charging unit is applied in intermittent current supply periods, which are interrupted by current free pauses, the direct voltage being sufficient to generate gas in the accumulator. During the treatment process, process data is registered, for at least one cell in the accumulator, which process data is used in order to control the treatment process.

METHOD AND DEVICE FOR BATTERIES

TECHNICAL FIELD

5 The present invention relates to a method and device for treatment, in the form of re-generation, of accumulators having at least one cell, preferably lead batteries, in which a varying direct voltage from a charging unit, is applied in intermittent current supply periods which are interrupted by current free pauses, the direct voltage being sufficient to generate gas in the accumulator.

10 THE TECHNICAL STANDPOINT

In a charged lead accumulator, i.e. a lead battery, the active substance in the positive electrodes consists of lead superoxide, PbO_2 , and of porous metallic lead in the negative electrodes. When the battery is discharged, these active substances are converted to lead sulphate, $PbSO_4$, sulphate ions being taken from the electrolyte, which is sulphuric acid.

15 In principle the process is the reversed at charging. Conventionally, when being re-charged by a continuous direct current, lead accumulators have, however, a limited ability of being recharged. The reason for this is not completely investigated, but it is supposed that influence is made by factors such as the products of discharge having a limited solubility in the electrolyte, it being considered that diffusion of the divalent lead

20 ions constitutes the limiting factor both at discharging and recharging. Furthermore, lead sulphate is a very poor conductor of electricity. All these circumstances often result in problems in connection with the charging of lead batteries, which i.a. risks being destroyed by inactive layers of lead sulphate which hinders the charging or decreases the capacity, and which eventually makes the battery useless. In addition, there are problems in the form of different densities before and after the charging, which leads to the

25 formation of sludge and to a decreased strength.

In WO 94/28610, there is presented a solution to the above problems in connection with the charging of accumulators, especially lead batteries. According to this document,

30 lead batteries may thus be charged by high current levels with a very good result and without a noticeable increase in temperature, when a direct voltage is being applied on the battery in intermittent current supply periods, interrupted by pauses in which no current is supplied, which periods are between about 0.5 seconds and about 10 seconds. The battery may be charged from a discharged state, in which case the current supply

35 intervals and the pause intervals are of approximately the same length, preferably between 0.5 and 1.5 seconds, one example presenting a current strength of 90 A being used, but it may also be maintenance charged by current supply periods of 0.5 seconds

each given battery. Instead, the mentioned methods aims at achieving a fast and optimised charging or maintenance charging of more conventional type.

DESCRIPTION OF THE INVENTION

5 One object of the present invention is accordingly to offer a method for treatment, in the form of regeneration, of accumulators, the treatment process being controlled, in terms of current supply period, pauses and current strength, based on given input data. As input data, there is thereby used process data which are registered cell by cell during the treatment process, preferably at least the temperature and the conductivity of the electrolyte in the accumulator. Additional input data for the controlling of the treatment process are general data for the accumulator/battery, which general data are being fed in at the start of the treatment process. The controlling of the treatment process is preferably performed automatically, by hardware and software which is adapted for the process, preferably by use of a microcomputer or the like. For the controlling there may also be used process data from earlier treatment processes, such earlier process data constituting experience data which is used in order to optimise the treatment process taking place.

20 A basic object of the method and device according to the invention, is to achieve a regeneration of batteries which is non destructive to the battery. The treatment process should moreover be adaptable and controllable for every single battery.

Accordingly, there is according to the invention introduced a method for treatment of accumulators according to claim 1.

25 By the ability to absorb current/the conductivity being determined for at least one cell in the battery during the treatment process, the treatment process can be controlled by aid of a control unit, preferably e.g. a microcomputer, based on measured process data, preferably at least in the form of measured temperature and conductivity. The measuring of process data and the controlling based on these process data may be performed individually for all or essentially all cells in the accumulator. An alternative, preferred form of surveillance is to measure the total current which runs to the accumulator during the current supply period. This is done by surveillance of the mean value of temperature and conductivity, during a number of current supply periods, e.g. ten periods. When the mean value of the subsequent current supply periods remains in the main constant, e.g. within a limit of typically about 5%, for a longer period, e.g. about 1000 current supply

achieved an explode- or chock-like effect, whereby the crystals present in the battery acid are disintegrated, and pure lead is separated, which is returned to the electrodes (the lead plates) at the recharging of the battery. In order to achieve an optimum effect, each cell in the accumulator should reach a voltage of at least 2,5 V during the current supply periods, which is assured by the above mentioned current strengths and pulse times.

Thereby, the energy supply during the current supply periods is higher than for the known methods, the object of which is only charging and not regeneration, but seen as a total, the energy supply is relatively low, thanks to the relatively long pauses. As a total, pulsing at 300 A e.g., corresponds to a charging current of about 20 A.

According to the invention, the treatment process is performed as a regeneration process, whereby a certain, but normally not complete, charging of the accumulator takes place at the same time as the regeneration, as a side effect of the treatment. After the regeneration, there is suitably performed a discharge of the accumulator, followed by a charging. This charging too may be performed by aid of a method which corresponds to the method according to the invention, the process however being controlled in a way which is optimal for the charging. It is however preferred that the charging takes place with a constant, i.e. continuous, current supply after the regeneration. According to an especially preferred embodiment, the treatment process is performed in a number of cycles, preferably 5-30, and even more preferred 5-20 cycles for traction batteries. In this case, each cycle consists of a regeneration part, typically having current supply periods of about 0.18 seconds, and pauses of about 3 seconds, and a charging part with standard charging, i.e. with continuous current supply of typically 2,34 V. Thereby, each regeneration part lasts for 2-8 hours, preferably 2-6 hours and most preferred about 6 hours, the constant charging parts lasting for 0.5-2 hours, preferably about 1 hour.

Without binding the invention to a certain theory, it is thereby considered that the constant charging acts in the form of a formatting of the electrode surfaces, in a way that corresponds to what takes place at the charging of an entirely new battery. Hereby, a maximum surface with an amorphous structure is achieved on the electrodes. It is realised that the treatment process for the regeneration is relatively long, and it is moreover not an object per se that the process should be shortened in relation to known processes for the charging of batteries. Typically, the treatment time according to the invention is at least 12 hours long, preferably at least 24 hours long, even more preferred 48 hours long and up to several days long. As an alternative, regeneration and charging may be performed at the same time by the method according to the invention, during total treatment times of the same length.

some or all input data in the group consisting of name of the customer, date, battery manufacturer, type number for the battery, type values for the battery, year of manufacture, time of the first operational use of the battery, time between each previously performed treatment, type of vehicle in which the battery is used and data registered in previous treatments, e.g. cell voltage and electrolyte density. These general data, or at least a main part of them, may be stored in a data storing unit attached to the battery, e.g. a chips, a bar code, or in a data bank in the device for the treatment, or similar.

According to yet another aspect of the invention, the treatment of a certain battery is performed when the conductivity which is determined at a certain cell voltage for this specific battery has reached a predetermined critical value.

According to another aspect of the invention, several devices for treatment of accumulators may share the same old process data from previous treatment sessions, by being connected to each other in a network. Hereby, a single server, in the network, may contain a database which is common for the devices, having experience values from previous treatment processes. Thus, there may be used experiences/process data from previous treatments of batteries of the same or similar type in other treatment devices which also are connected to the network, for controlling the treatment of a certain battery in a first treatment device, which is connected to the network. The control units of the batteries may be connected to the network by GSM and/or local radio/telemetric communication systems, such as dect, blue tooth etc., or corresponding systems. By the network and the common server, it is also possible to remotely survey the devices and to upgrade the software of their control units.

Since every accumulator behaves individually, which strongly depends on its history, i.e. the treatment and environmental influence which it has been exposed to, the optimal treatment method for different accumulators varies. By putting together a database, according to the above, which contains essential parameters for each treated accumulator, before, during and after previously performed regenerations in combination with the type of the accumulator, there may be put together an algorithm (e.g. in the form of an equation or matrix), in order to achieve the best possible treatment process for each new treatment of an accumulator. From a commercial point of view, it may thereby be of extra importance to be able to predict the expected treatment time. Such a database may be built by combining the data which has been collected from the greatest possible number of regenerating machines. This may be done by these data being manually combined and distributed, which however is practically difficult why the best solution is to

CLAIMS

1. Method for treatment, in the form of regeneration, of accumulators having at least one cell, preferably lead batteries, in which a varying direct voltage from a charging unit is applied in intermittent current supply periods, which are interrupted by current free pauses, the direct voltage being sufficient to generate gas in the accumulator, characterised in that process data, for at least one cell in the accumulator, is registered during the treatment process, which process data is used in order to control the treatment process.
2. Method according to claim 1, characterised in that a conductivity in an electrolyte in the cell, and/or a temperature in the electrolyte in the cell constitutes said process data.
3. Method according to claim 1 or 2, characterised in that sensors for said process data are introduced down into the electrolyte in each cell where process data is to be registered.
4. Method according to any of the preceding claims, characterised in that what is controlled during the treatment process is a length of said current supply periods, which may be between 0.01 and 10 seconds, preferably at least 0.1 seconds, even more preferred at least 0.15 seconds and 0.5 seconds at the most, preferably 0.4 seconds at the most and even more preferred 0.25 seconds at the most, a length of said pauses, which may be between 1-20 seconds, preferably 1-10 seconds and even more preferred 1-5 seconds, typically about 3 seconds, the current supply periods preferably being considerably shorter than the pauses.
5. Method according to any of the preceding claims, characterised in that a current is applied during the current supply periods, which current is strong enough in order for each cell in the accumulator to reach a voltage of at least 2.5 V during the current supply periods.
6. Method according to any of the preceding claims, characterised in that a current level during said current supply periods amounts to between 80 and 1000 A, preferably at least 110 A, preferably at least 200 A and even more preferred at least 250 A, but 1000 A at the most.

general data preferably is registered automatically at start up of the treatment process.

5 14. Method according to claim 13, characterised in that older general data and process data too, for other accumulators and/or for previous treatments of the specific accumulator, are used for the controlling of the treatment process.

10 15. Method according to claim 14, characterised in that access to said older general data and older process data is ensured by connection to a network having a common database for these data for different devices for the treatment of accumulators.

15 16. Method according to claim 15, characterised in that said network also is arranged to be used for the surveillance of the treatment process and/or for the upgrading of software for the treatment process.

20 17. Device for treatment, in the form of regeneration, of accumulators having at least one cell, preferably lead batteries, which device comprises a transformer having a primary coil adapted to be connected to the electricity supply network, a secondary coil, a rectifier connected to the secondary coil, a positive and a negative cable clip, adapted to be connected to an accumulator which is to be treated, and an automatic actuator connected to the primary coil for intermittent connecting and disconnecting of the electricity supply network with short current supply periods interrupted by current free pauses, characterised in
25 means for registering/measuring of process data, at least in one cell of the accumulator, and means for controlling the treatment process based on this process data.

30 18. Device according to claim 17, characterised in that sensors for registering/measuring a conductivity in an electrolyte in the cell, constitutes said means for registering/measuring process data, and/or sensors for registering/measuring a temperature in the electrolyte in the cell, said registering/measuring preferably being arranged to be performed by opening of the accumulator and applying said sensors.

35 19. Device according to any of claims 17-18, characterised in that said means for registering/measuring process data are arranged to individually regis-

formed treatments, type of device in which the accumulator is used.

5 25. Device according to claim 24, characterised in that said device comprises means for connecting it to a database, preferably via a network, for use of older general data and process data for previous treatment processes, for other accumulators and/or for previous treatments of the specific accumulator, in the controlling of the treatment process.

10 26. Device according to claim 25, characterised in that said network also is arranged to be used for the surveillance of the treatment process and/or for the upgrading of software for the treatment process.

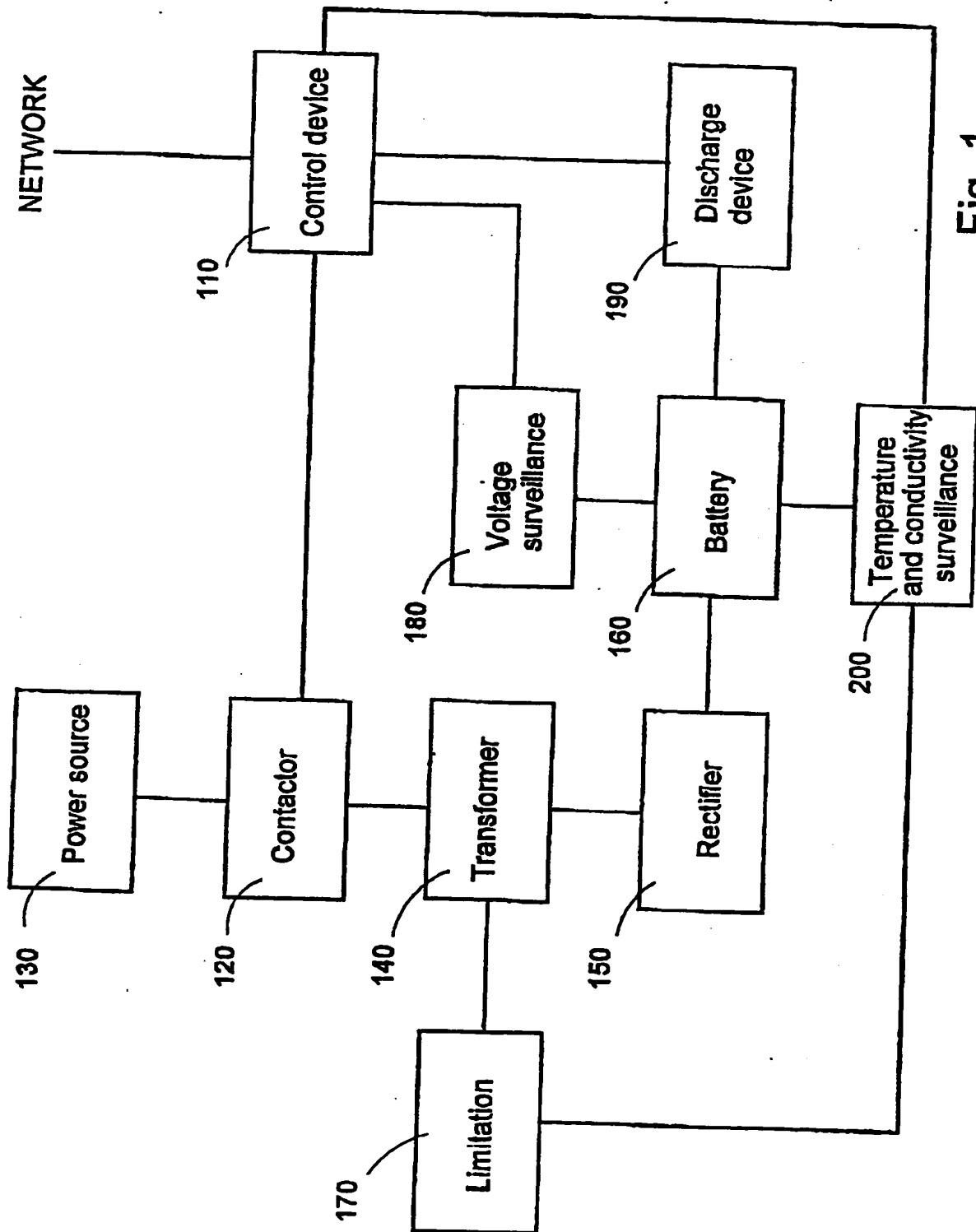


Fig. 1

COMPLETION OF FILING NATIONAL PHASE OF PCT APPLICATION

UNDER RULE 35 USC 371 AND 37 CFR 1.494(c) OR 1.495(c)

#4

COMPLETION
For PCT Cases Only

BOX PCT

In re PATENT APPLICATION of

Inventor(s): Lindqvist

Appln. No.: 10 009,302
 Series Code: 1 Serial No.: 01049

Atty. Dkt. 627-1446
 M# Client Ref

National Phase Filed: December 7, 2001

Based on PCT SE00 01049
 I Country Code

(Our Deposit Account No. 50-0687)

(Our Order No. 62-627
 C# M#

Title: METHOD AND DEVICE FOR
 BATTERIES

Date: August 13, 2002



FILING OF ITEM(S) LATE IN PCT/USA NATIONAL CASE

Hon. Commissioner of Patents
 and Trademarks
 Washington, D.C. 20231

Sir:

The following completes the filing of the subject application under Rule 494(c)/495(c). Please accept the following attached items:

1. Missing Requirements Notice (PCT/DO/EO/905) ☒ copy attached ☐ not yet received
2. ☒ Signed Declaration ☒ Original ☐ Facsimile/Copy ☐ with spec/claims attached
3. ☐ Translation of the International Application into English including:
 - a. ☐ Request; b. ☐ Abstract
 - c. ☐ pgs. Spec. and Claims; d. ☐ Translation verification
 - e. ☐ sheets Drawing which are ☐ informal ☐ formal of size ☐ A4 ☐ 11" ☐ 13" ☐ 14"
4. ☐ a copy of International Search Report (ISR) attached (page(s))
 - a. ☐ plus Annex of family members (page(s))
5. Information Disclosure Statement including:
 - a. ☐ Form PTO-1449 listing documents
 - b. ☐ Copies of document(s) listed on Form PTO-1449
 - c. ☐ A concise explanation of ISR references is given in the ISR
6. ☐ Assignment and cover sheet. Please return the recorded assignment to the undersigned.
7. ☐ Copy of Power to international application agent
8. (No.) Verified Statement(s) establishing "small entity" status under Rules 9 & 27.
9. ☐ Formal Drawings: sheet(s) ☐ informal; ☐ formal of size: ☐ A4 ☐ 11" ☐ 13" ☐ 14"
10. ☒ Please immediately start national examination procedures (35 USC 371(f))
11. ☒ Attached:

Petition Under 37 C.F.R. § 1.101(b) to File Application on Behalf of Non-Signing Inventors
 Affidavit Showing Diligent Effort to Obtain Signatures of Inventors

#4

12. ☐ Preliminary Amendment:

13. ☒ Basic U.S. National fee per Rule 492(a)(1)-(4) was previously timely filed.

14. Calculation of remaining fees due (if any): based on amended claim(s) per above item

☐ 12 (above) or item(s) ☐ 12 ☐ 14 ☐ 17 ☐ 25

15. CLAIMS FEES ☒ previously paid ☐ paid herewith as follows:

				Large/Small Entity		Fee Code
16. Total Effective Claims		minus 20 =		x \$	+	966/967
17. Independent Claims		minus 3 =		x \$	+	964/965
18. If <u>any proper</u> multiple dependent claim (ignore improper) is present, add				\$	+	968/969
19. Filing Declaration late, fee paid	previously	<input checked="" type="checkbox"/> now		\$	+65	154/254
20. SUBTOTAL =				\$65		
21. <u>Original due date:</u> March 14, 2002						
22. <u>Petition is hereby made to extend the original due date to cover the date this response is filed for which the requisite fee is attached</u> 4 Months				(1 months) (2 months) (3 months) (4 months) (5 months) \$720	+720	115/215 116/216 117/217 118/218
23. TOTAL				\$785		
24. If "non-English" box 2 is X'd, add Rule 17(k) processing fee				\$	+	156
25. If "assignment" box 6 is X'd, add recording fee				\$		581
26. TOTAL FEE ENCLOSED =				\$785		

CHARGE STATEMENT: The Commissioner is hereby authorized to charge any fee specifically authorized hereafter, or any missing or insufficient fee(s) filed, or asserted to be filed, or which should have been filed herewith or concerning any paper filed hereafter, and which may be required under Rules 16-18 (missing or insufficient fee only) now or hereafter relative to this application and the resulting Official document under Rule 20, or credit any overpayment, to our Account/Order Nos. shown in the heading hereof for which purpose a duplicate copy of this sheet is attached.

This **CHARGE STATEMENT** does not authorize charge of the issue fee until/unless an issue fee transmittal form is filed.

Manelli Denison & Selter, PLLC

By: Atty: Jeffrey S. Melcher

Reg. No. 35,950

Customer No. : 20736

Sig:

Fax: (202) 887-0336

Tel: (202) 261-1045

NOTE: File in duplicate with PTO return receipts & attachments



UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents, Box PCT
United States Patent and Trademark Office
Washington, D.C. 20231
www.uspto.gov

U.S. APPLICATION NUMBER NO. 10/009,302	FIRST NAMED APPLICANT Frank Lindqvist	ATTY. DOCKET NO. 627-1446
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20736
MANELLI DENISON & SELTER
2000 M STREET NW SUITE 700
WASHINGTON, DC 20036-3307

INTERNATIONAL APPLICATION NO.

PCT/SE00/01049

I.A. FILING DATE 05/24/2000	PRIORITY DATE 06/15/1999
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CONFIRMATION NO. 5942

371 FORMALITIES LETTER



OC00000007450445

Date Mailed: 02/14/2002

NOTIFICATION OF MISSING REQUIREMENTS UNDER 35 U.S.C. 371 IN THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US)

The following items have been submitted by the applicant or the IB to the United States Patent and Trademark Office as an Elected Office (37 CFR 1.495):

- U.S. Basic National Fees
- Indication of Small Entity Status
- Priority Document
- Copy of IPE Report
- Copy of the International Application
- Copy of the International Search Report
- Preliminary Amendments
- Small Entity Statement

The following items **MUST** be furnished within the period set forth below in order to complete the requirements for acceptance under 35 U.S.C. 371:

- Oath or declaration of the inventors, in compliance with 37 CFR 1.497(a) and (b), identifying the application by the International application number and international filing date.

ALL OF THE ITEMS SET FORTH ABOVE MUST BE SUBMITTED WITHIN TWO (2) MONTH FROM THE DATE OF THIS NOTICE OR BY 22 or 32 MONTHS (where 37 CFR 1.495 applies) FROM THE PRIORITY DATE FOR THE APPLICATION, WHICHEVER IS LATER. FAILURE TO PROPERLY RESPOND WILL RESULT IN ABANDONMENT.

The time period set above may be extended by filing a petition and fee for extension of time under the provisions of 37 CFR 1.136(a).

Applicant is reminded that any communications to the United States Patent and Trademark Office must be mailed to the address given in the heading and include the U.S. application no. shown above (37 CFR 1.5)

*A copy of this notice **MUST** be returned with the response.*

JOHN L ANDERSON

Telephone: (703) 308-9116

PART 1 - ATTORNEY/APPLICANT COPY

U.S. APPLICATION NUMBER NO.	INTERNATIONAL APPLICATION NO.	ATTY. DOCKET NO.
10/009,302	PCT/SE00/01049	627-1446

FORM PCT/DO/EO/905 (371 Formalities Notice)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT Application of
Lindqvist, et. al.

Group Art Unit: Unknown

U.S. Serial No. 10/009,302

Examiner: Unknown

Filed: December 7, 2001

Att. Docket No.: 627-1446

For: METHOD AND DEVICE FOR BATTERIES

* * * *

**AFFIDAVIT SHOWING DILIGENT EFFORT TO OBTAIN SIGNATURES OF
INVENTORS UNDER 37 C.F.R. § 1.47**

Hon. Asst. Commissioner of Patents
and Trademarks
Washington, D.C. 20231

Sir:

I, Lars Åke Holger Johansson, born in Arvika, Sweden the 16th of March 1943 and now living in Lövnäs, 67196 Magnskog, Sweden declare and state as follows.

I am the president of Macbat AB (org.nr. 556095-1138), Box 189, 67124 Arvika, Sweden, which changed its name from Holgia AB to Macbat AB on October 25, 2001. [See enclosure 1] I was also the president of Holgia AB. Accordingly, I have always been a signing officer for both Holgia AB and Macbat AB.

In 1997 I entered into the business field related to charging of batteries, by the purchase of a new and patented method.

In 1998 I contacted with the president of Fyrtech AB, Mr. Henrik Lindqvist, to discuss assistance concerning development and production of our battery charging system.

On April 13, 1999, Holgia AB made an agreement with Fyrtech AB, which gave Fyrtech AB exclusive rights to produce and conduct the development work of the new system, whereas Holgia AB was given exclusive rights to all Intellectual Property of the development work. As a consequence of the development work, a patent application (SE 9902286-5) was filed in the Swedish Patent Office on June 15, 1999, with Mr. Frank Lindqvist (a son of Mr. Henrik Lindqvist) and Mr. Henrik Lindqvist as the named inventors. Holgia AB was the owner under the contract and, accordingly, Mr. Frank Lindqvist and Mr. Henrik Lindqvist signed an assignment on August 26, 1999 naming Holgia AB as the assignee, which was filed in the

Swedish Patent Office. [See enclosure 2] SE 9902286-5 is the priority document for the present application Serial No. 10/009,3002.

On May 24, 2000, a PCT application (PCT/SE00/01049, See enclosure 3) was filed claiming priority from SE 9902286-5, which designated the U.S. In connection with filing of this PCT application the inventors, Mr. Frank Lindqvist and Mr. Henrik Lindqvist, did not hesitate to sign required documents. [See enclosure 4]

In December 20, 1999, liquidation of Fyrtech AB was decided. [See enclosure 5] On March 7, 2000 Holgia AB purchased all rights to all of the assets related to battery charging that was in possession of Fyrtech AB in liquidation. [See enclosure 6]

As a consequence of the liquidation of Fyrtech AB, Mr. Henrik Lindqvist was without work and income. It was therefore agreed that Mr. Henrik Lindqvist should be paid some of the future expected royalty income in advance and that he and his son in return would assist in further development of our battery system.

In June 2001, Mr. Frank Lindqvist and Mr. Henrik Lindqvist had received more than one million SEK (1.000.000 SEK) in payments from Holgia AB. However, no useful further development work was actually presented, e.g. no new subject-matter was identified that could serve as the basis for a new patent application. Moreover the business development of Macbat AB did not progress as expected, which caused financial difficulties. As a consequence, Holgia AB (now Macbat AB) informed Mr. Frank Lindqvist and Mr. Henrik Lindqvist that it was not interested in and could not afford further development work from them. In conjunction therewith, a generous royalty agreement was presented, which the inventors did not agree to. Despite, these generous efforts, Mr. Frank Lindqvist and Mr. Henrik Lindqvist have refused signing any further documents related to PCT/SE00/01049 unless a payment of more than 1,5 million SEK (1.500.000 SEK) was made. However, Holgia AB/Macbat AB was not in a financial situation that could allow any advance payments of future royalties, due to the early stage of the commercial development of the new battery charging system.

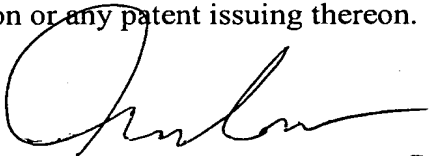
In November 2001 it was decided that PCT/SE00/01049 should be filed as a national phase PCT application in the U.S. (as well as many other countries). The U.S. national phase PCT application was filed as the present Serial No. 10/009,302 on December 7, 2001, without an oath. On April 18, 2002, the oath, power of attorney and assignment document was sent via registered mail to Frank Lindqvist for the inventors signature by our patent agency Hynell Patenttjänst AB. [See enclosure 7] However, these documents were never signed and returned by the inventors Frank Lindqvist and Henrik Lindqvist. On July 12, 2002 a second

copy of the documents including the oath was sent by registered mail to both inventors Frank Lindqvist and Henrik Lindqvist to be signed by them. [See enclosure 8] These documents have also not been returned. Our patent agent, Peter Kylin, has also been in contact by phone with the inventors to try to persuade them of the necessity to sign the documents, however, without success.

It appears that the inventors are using the situation in U.S. and in many other patent offices, e.g. EPO, to obtain unjustified payments. We have put a lot of effort into negotiations to find a settlement, but without success.

We therefore see no other possible alternative at this stage than to petition the U.S. Patent and Trademark Office to allow us to take over the prosecution of the present patent application, which we rightfully own by contract and by assignment of the priority document as set forth above.

I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.


.....Place Århus, Sweden Date 08/09/2002
Åke Holger Johansson
President of Macbat AB